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**REMARKS**

Claims 1-21 and 32-36 were pending and remain for consideration in the present amendment. Claims 1 and 32 have been amended, Claims 22-31 cancelled, leaving Claims 1-21 and 32-36 for further consideration in the present amendment.

Support for the amendment to Claims 1 and 32 can be found at least in paragraphs [0044]-[0047] and Figures 1-3. In addition, Claim 32 has been amended to correct a typographical error noted by the Applicants. No new matter has been entered.

Reconsideration and allowance of the claims is respectfully requested in view of the following remarks.

**First Claim Rejection Under 35 U.S.C. §103(a)**

Claims 1-4, 6, 7, 10-16, 21, and 32-36 stand rejected under 35 U.S.C. §103(a), as allegedly unpatentable over U.S. Patent No. 6,143,079 to Halpin (hereinafter "Halpin") in view of U.S. Patent No. 5,077,875 to Hoke et al. (hereinafter "Hoke"). Applicants respectfully traverse.

Halpin is generally directed to a process chamber that includes a system of multiple gas ports. Generally, the process chamber includes an inlet port, a primary main port, a first side outlet port and a second side outlet port. The side outlet ports are described as opposite each other and approximately 90 degrees from the inlet and outlet ports.

As discussed in previous responses, Hoke is generally directed to a metallorganic vapor deposition reactor vessel. The reactor vessel generally includes a chamber having a top surface that is substantially parallel to a substrate disposed within the chamber. A baffle plate is disposed adjacent to an inlet to increase uniformity and decrease turbulence of a vapor stream flowing through the chamber. A block is disposed within the chamber, which is positioned between the baffle plate and a substrate support assembly.

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To establish a *prima facie* case of obviousness, the Examiner must meet the burden of establishing (1) that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references; (2) that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made; and (3) that all elements of the claimed invention are disclosed in the prior art. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Under the first element, to establish *prima facie* obviousness of a claimed invention, the proposed modification cannot render the prior art unsatisfactory for its intended purpose. If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). In each one of Applicants' independent claims, the claimed reactor assembly comprises, *inter alia*, first and second sidewall openings that define an entire flow path of the gas and/or the reactant flow into and out of the process chamber. In contrast, Halpin teaches and suggests a process chamber that includes a multiple port system, i.e., an inlet port, a primary main port, a first side outlet port, and a second side outlet port. These ports are necessary so as to provide "improved gas flow". Specifically, the outlet ports are "symmetrically distributed in the chamber to facilitate uniform, laminar flow, and reduce recirculations." (see Halpin, Col. 10, ll. 39-41). If Halpin were modified to have first and second sidewall openings that define the entire flow path of the gas and/or the reactant flow into and out of the process chamber as claimed by Applicants, the intended purpose of Halpin would be destroyed. Halpin is explicit in its teachings that its process chamber has multiple outlet ports to provide gas and/or reactant flow to the sides of the substrate being processed. As such, the proposed modification with Hoke to minimize the multiple outlet ports to a single outlet would render the Halpin invention unsatisfactory for its intended purpose. For example, according to Halpin:

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[b]y providing side gas outlets 26 and 28, in addition to the main gas outlet 24, gas distribution within the chamber can be controlled to provide gas flow toward the sides of the chamber where side outlet ports are located, as well as generally downstream direction toward the main outlet.

(Halpin, Col. 14, ll. 43-48)

Furthermore, by improving gas flow in this manner, the chamber 10 can be made more compact than previously designed chambers because the reactant gases do not require additional space to spread out toward the sides of the chamber before reaching then wafer.

(Halpin, Col. 14, ll. 51-55)

Thus, modifying the multiple outlet ports (which is a critical necessity to the gas flow properties provided by Halpin's multiple outlet port process chamber) in the manner suggested by Hoke would render the Halpin invention unsatisfactory for its intended purpose.

Moreover, it is well known that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teaching of the references are not sufficient to render the claims *prima facie* case obvious. *In re Ratti*, 270 F. 2d 810, 123 USPQ 349 (CCPA 1959). Clearly, modifying the process chamber as taught by Halpin in the manner proposed by a combination with the Hoke reference would change the principle of operation. Halpin teaches and suggest a process chamber having multiple outlet ports to provide a desired laminar flow pattern into and out of the process chamber as well as provide flow toward the sides of the chamber. By modifying Halpin to have a single outlet port would necessarily change the principle of operation. No longer would gas flow be provided towards the sides of the chamber where the side outlet ports are located. For at least these reasons alone, the cited combination of Halpin with Hoke does not establish a *prima facie* case of obviousness against Claims 1-4, 6, 7, 10-16, 21, and 32-36.

With regard to the second element required to establish *prima facie* obviousness, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. Here, there is no reasonable expectation of success. The primary reference, Halpin, teaches and

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suggests a multiple outlet port process chamber that includes a primary main outlet port, a first side outlet port, and a second side outlet port. The proposed modifications to Halpin would result in a markedly different process chamber that would not enjoy the benefits disclosed by utilizing a process chamber with the side outlet ports. As noted in Halpin, the side outlet ports are critical to its desired gas flow properties. Halpin suggests the elimination of the main outlet port in some embodiments, but always requires two or more side outlet ports at a minimum so as to provide gas flow toward the sides of the chamber (see Halpin, Col. 12, ll. 38-53).

In applying Section 103, the U.S. Court of Appeals for the Federal Circuit has consistently held that one must consider both the invention and the prior art "as a whole", not from improper hindsight gained from consideration of the claimed invention. See, *Interconnect Planning Corp. v. Feil*, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985) and cases cited therein. According to the *Interconnect* court:

[n]ot only must the claimed invention as a whole be evaluated, but so also must the references as a whole, so that their teachings are applied in the context of their significance to a technician at the time - a technician without our knowledge of the solution.

*Id.* Also critical to this Section 103 analysis is that understanding of "particular results" achieved by the invention. *Id.* The present rejection fails to consider Halpin "as a whole" and is improperly relying on hindsight for the basis of the rejection. It is well known patent law, that when the Section 103 rejection was based on selective combination of the prior art references to allegedly render a subsequent invention obvious, "there must be some reason for the combination other than the hindsight gleaned from the invention itself." *Id.* Stated in another way, "[i]t is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." *In re Fritch* 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992).

Finally, with regard to the third element that is required to establish *prima facie* obviousness, it is submitted that all features of the claimed invention are not disclosed in the prior art. In each one of Applicants' independent claims, the claimed reactor assembly

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comprises, *inter alia*, first and second sidewall openings that define the entire flow path of the gas and/or the reactant flow into and out of the process chamber. Halpin fails to teach or suggest this feature and for reasons previously discussed, modification in accordance with the teachings provided by Hoke, is clearly improper. Therefore, because all of the elements of independent claims 1 and 32 are not taught in Halpin, or Hoke, there is no *prima facie* obviousness.

In view of the foregoing, it is therefore respectfully submitted that the rejections to Claims 1-4, 6, 7, 10-16, 21, and 32-36 are improper and are requested to be withdrawn.

Other Claim Rejections Under 35 U.S.C. §103(a)

Claims 5, 7, 17-19, and 20 stand rejected variously over Halpin in view of Hoke and JP 02-152251 to Takagi ("Takagi") or U.S. Patent No. 5,190592 to Chazee ("Chazee").

For reasons previously discussed, a *prima facie* case of obviousness has not been established against independent Claims 1 and 32 based on the Halpin and Hoke references. Since rejected Claims 5, 7, 17-19, and 20 variably depend from one of these independent claims, a *prima facie* case of obviousness has not been established against these claims for at least the same reasons discussed above. Takagi and Chazee fail to compensate for the deficiencies of Halpin and Hoke. Accordingly, the rejection is requested to be withdrawn.

It is believed that all of the pending claims are in condition for allowance, which action is earnestly solicited.

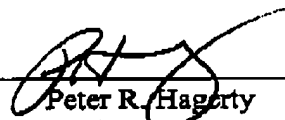
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If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Applicants' Attorneys.

Respectfully submitted,

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